

MISSOURI. Conservationist

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The Beauty of Birds

For most of my adult life, I have enjoyed watching birds and have kept feeders to attract them. My wife and I have enjoyed backyard birding with our children and now with our grandchildren.

My interest in birds has grown beyond the backyard, and I find myself listening and watching for them anywhere and anytime I go outdoors. The suite of birds seen and heard as you float down an Ozark stream is different from those observed in a farm meadow or a mature forest. The birds around us change with the seasons of the year and even with the time of the day.

Turkey hunting at daybreak affords a connection with nature in all its aspects, and hunters crave this total experience. The photo with this essay is the exciting culmination of such a hunt this past April, but it is the memory of spring mornings shared with my sons that more fully reflects my recollection of the hunt. Standing in the deep woods and listening to the sounds in the minutes before daybreak, one hears birds of the night like whippoorwills and barred owls calling until the sky lightens, and a chorus of different birds signal the start of a new day. I recognize some of the songs, but I cannot identify all of them, and I want to learn more.

Turkey hunters listen for gobblers to call and reveal their location. When that happens, the focus often changes from enjoying the diversity of birds to locating a specific animal. At times, this involves a fast hike through the woods while still alert for sounds and sights around you. The ability to imitate turkey calls adds to the experience through direct communication with the gobbler, and, although your focus is the gobbler, you also see other birds, squirrels and the brightly colored

redbud and dogwood trees. There is a sense of delight in just being in such a place.



John Hoskins with his spring 2009 turkey harvest.

It's moments such as the ones I experienced in the woods during this past turkey season that influenced my career choice. Becoming director of the Missouri Department of Conservation opened doors of opportunity that I never dreamed possible! Today, I serve as Board Chairman for the North American Bird Conservation Initiative. NABCI began in 1999 and is a partnership for national bird conservation initiatives and for collaborative work in Canada and Mexico as well.

Bird conservation is challenging and complex, in part due to the migratory nature of many bird species. The goal is to use sound science and effective management to ensure populations and habitats of North America's

birds are protected, restored and enhanced through coordinated efforts at the international, national, regional and state levels.

Birds are beautiful, economically important, a priceless part of America's natural heritage, and critical indicators of the health of the environment upon which we all depend. Like thousands of Missourians, I have the personal desire to learn about and enjoy birds, and, as director of your Conservation Department, I also have a professional commitment to conserve and protect them.

John Hoskins, director









OUR MISSION: *To protect and manage the fish, forest and wildlife resources of the state; to serve the public and facilitate their participation in resource management activities; and to provide opportunity for all citizens to use, enjoy and learn about fish, forest and wildlife resources.*



Cover and left is a snowberry clearwing moth (*Hemaris diffinis*) by Noppadol Paothong. To learn more about moths in Missouri, read Donna Brunet's article, *Flutterly Fascinating*, starting on Page 14.

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FRIENDS & ALLIES

Going South by Kelly Gillespie [April] was a wonderful article!

I learned so much from it. I had no idea that our birds were in such peril! I also didn't realize the physical challenge of their migratory flights. I knew hummingbirds were incredible travelers, but did not realize so many other types of birds went that far south.

I love that we are getting an international alliance — a meeting of the minds — with our Central/South American neighbors. We've got to create the habitat. It takes small steps with consistency to make a difference, and this is an excellent start. I won't take my feathered backyard visitors for granted any more!

*Elizabeth Frazier Fuemmeler, MA, CCC-SLP
Prairie View Elementary, Lee's Summit*

ENDURING ETHICS

I just read *Catfish, Mo.* in your April issue. I grew up fishing the rivers, lakes and streams in Missouri. My dad was my mentor when it came to all things outdoors. His two passions were quail hunting and fishing for catfish. My dad passed

in 1996 before he had a chance to see the rapid decline of the bobwhite quail.

I am glad the Department of Conservation came to the logical and scientific conclusion that "noodling," or whatever colorful name you choose to give hand fishing, should be stopped.

I asked my dad as a small boy why we fish so much and other fisherman caught so many more big flatheads. Dad explained that those guys were hand fishing, and then he explained the process to me. When I wondered why we didn't hand fish, Dad made a point to tell me when the

catfish is removed from the nest thousands of unhatched catfish die because there is no parent to protect them. He also said it was "against the law." Many people justify fishing by these methods as being handed down through the generations. That makes those who do this a second-, third-, or fourth-generation poacher in my opinion. I have experienced the thrill of hooking a big cat on a rod and reel, and I've gotten to feel that unmistakable tug of a big cat on a trot line and a limb line. I am glad my grandchildren and their children will one day get to do the same thanks to the efforts of the MDC!

Les James, Hannibal

THE SILENT TYPE

What a great article, *To Call or Not to Call*, in the April *Conservationist*. An avid turkey hunter myself, with 25 years experience hunting both Missouri and Kansas, I found Mark Goodwin's article right on — a must read for all turkey hunters, especially young hunters. Experience — that says it all, and Mark talks more about being quiet than calling. Young hunters take heed, he's talking the right stuff here.

Rob Bolin, St. Joseph

DAY-TRIPPIN' TIPS

We always look forward to the *Missouri Conservationist*. Your recent article *Walk on the Froggy Side* [March; Page 6] led us to explore southeast Missouri. We visited Mingo National Wildlife Refuge and Otter Slough Conservation Area. Both sites offered great ways to view animals and nature. We thoroughly enjoyed ourselves. Thanks for the day-trip idea!

Teresa Leicht, Cuba

BARREL OF INFO

I have to really complement your organization for the excellent work and time you put into developing each issue — the photos, stories, feature articles and most of all the Web address you provide is outstanding. I especially liked the *Collect Those April Showers* article [April; Page 7] — the Web site you provide is excellent! I sure hope Gov. Nixon puts a bit more money into the Conservation funding 'cause it sure would be worth it!

Roger R. Conway, Jefferson City



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Reader Photo LAKE LIFE

Janet White captured this picture of a great blue heron swallowing a crappie at her "little lake cabin" in Grundy County. White said she has spent much of her time at the cabin since she retired three years ago. "I caught this particular picture of the heron as I was photographing goldfinch and downy woodpeckers at the feeders outside my window," White said. "At last counting, I have identified 50 species that inhabit this tiny little haven."

now we're COOKIN'

Pecan-Crusted Crappie

¾ cup chopped pecans
1 tablespoon sesame seeds
1 ½ pounds of crappie (4 servings)
1 clove garlic, minced
2 tablespoons butter, melted
Salt and pepper

Stir together the pecans and sesame seeds and set aside. Arrange fish on a baking dish or baking sheet. Add garlic to melted butter and brush on the fish. Cover fish with nut mixture. Salt and pepper to taste. Chill or let stand for 30 minutes. Heat oven to 400 degrees.

Heat a small amount of olive oil in a skillet and sauté the fish, pecan side down for about 5 minutes. Transfer to an oiled baking sheet. When all fish are sautéed, bake with pecan side up until meat flakes.

Barbecue Turkey

Wild turkey breast
½ cup soy sauce
½ cup water
2 tablespoons brown sugar
2 tablespoons vegetable or olive oil
¼ teaspoon black pepper
½ teaspoon crushed garlic
1 tablespoon lemon juice
¼ teaspoon Tabasco sauce

Cut fresh or fully thawed meat into strips 1 inch long by ¼ inch thick. Mix other ingredients together, add meat and marinate overnight.

Drain meat, keeping the marinade. Grill on low-medium heat for 10 minutes, basting with marinade.

Find a video and a PDF to download of these recipes, as well as many others, at www.MissouriConservation.org/19463.



ASK THE OMBUDSMAN

Q: How can I replace my lost Heritage Card?

A: New or replacement Heritage Cards may be purchased for \$2 wherever fishing and hunting permits are sold. The plastic card resembles a credit card with a magnetic strip on the back that stores information. The hunter-education identification number appears on the card and verifies completion of that training. When buying permits, the clerk can scan the card and eliminate the need to key in your personal information. Heritage Card holders also receive a 15 percent discount on selected retail merchandise at Conservation Department facilities, including seedling orders from the state nursery. For more information, see this Web site: www.mdc.mo.gov/about/heritage.html.

Q: What happened to the tumble bug? Growing up on a farm north of Kansas City, we had cattle and frequently saw tumble bugs rolling up manure balls. It has probably been 40 years since I last saw one.

A: Tumble bugs, or dung beetles, do appear to have declined in Missouri and elsewhere. There are several likely causes for the decline. These include the use of fly and intestinal parasite control chemicals on cattle, which pass through their system and can make their dung toxic to insects. The popularity today of cool-season grass pastures can lead to drier and more compacted soils that are less



Dung beetle

hospitable to digging insects (dung beetles bury their dung balls to provide food for their young). As we manage more native prairies using grazing cattle, dung beetles are becoming more common on those sites. They provide many benefits, such as controlling

insect pests, nutrient recycling and improving soil structure. For more information, visit: <http://attra.ncat.org/attra-pub/dungbeetle.html>.

Ombudsman Tim Smith will respond to your questions, suggestions or complaints concerning Department of Conservation programs. Write him at PO Box 180, Jefferson City, MO 65102-0180, call him at 573-522-4115, ext. 3848, or e-mail him at Ombudsman@mdc.mo.gov.



Species of Concern

Grass Pink



Species of Concern: Grass Pink

Scientific name: *Calopogon tuberosus*

Distribution: Eastern Ozarks

Classification: Imperiled

To learn more about endangered species: www.MissouriConservation.org/8227

THIS SHOWY ORCHID sometimes grows more than 2 feet tall. It inhabits areas where constant seepage of groundwater creates wet meadows known as fens. Such spots are scattered throughout much of the eastern Ozarks, particularly around the margins of the St. Francis Mountains. Grass pinks are known to live in Shannon and St. Francois counties, and historic records show them in Reynolds County as well. However, undiscovered colonies could exist in isolated pockets of suitable habitat in other parts of the Ozarks. Like other native orchids, grass pinks are sensitive to disturbance and almost never survive transplanting. This is partly because of their very specific soil and water requirements and because they rely on a mutually beneficial relationship with fungi that live in the soil around their roots. If you find one, photograph it and send the pictures to Missouri Department of Conservation, Resource Science Division, PO Box 180, Jefferson City, MO 65102-0180.

PHOTO: JIM RATHER; ART: MARK RAITHEL

Highways Going to the Birds

Business brings nature to road-weary travelers.

Missouri's 19 interstate highway rest areas recently got a birdy boost from a civic-minded St. Louis-area business. S&K Manufacturing of O'Fallon donated 64 bluebird nest boxes and 32 purple martin houses to make rest stops more attractive to birds and to the 24 million people who visit rest areas annually.



Purple martins, which arrive in Missouri in April and stay until early fall, are known for their voracious appetites for flying insects. The bluebird — Missouri's state bird — is simply beautiful.

Secretive Amphibian

Eastern narrow-mouthed toad lives mostly underground.

The eastern narrow-mouthed toad (*Gastrophryne carolinensis*) spends most of its life in the soil beneath rocks or logs that are near, but not in, water. It inhabits most of southern Missouri. In the Ozarks, individuals sometimes are found beneath rocks on glades and other dry, rocky areas. Adaptations for an underground lifestyle include a wedge-shaped head that is perfect for crawling into crayfish holes and tight places.

Since they do not have to swim, eastern narrow-mouthed toads have lost the webbing that most frogs and toads have between their toes, along with the external "tympanum" or eardrum. Ants, termites and small beetles make up the bulk of their diet. The male's mating call is a nasal bleating, like the cry of a lamb.





Rebel's Cove CA

An all-around outdoor paradise

This recreational paradise surrounds the only remaining unchannelized portion of the Chariton River, which offers excellent catfishing. The zigzag river channel harbors a variety of wildlife, including river otters. Facilities include two boat ramps, a pavilion, miles of internal access trails with a wooden foot bridge and a deck overlooking one of seven wetland pools. Besides primitive camping, nature viewing and photography, the area offers good deer, dove, rabbit, squirrel and turkey hunting. Waterfowl hunting depends on autumn rainfall. For more information, visit www.MissouriConservation.org/2930.



Dalton Range

Take hunting and shooting skills to the next level.

Women who have attended introductory-level shooting workshops can take their skills to the next level at a Women's Shooting Sports Day June 6 at the Andy Dalton Shooting Range and Outdoor Education Center in Greene County. The all-day event includes rifle, shotgun, pistol and archery shooting. This intermediate-level training builds on knowledge and skills acquired in previous workshops. Topics to be covered include shooting safety and technique and hunting strategies and

ethics. Participants are encouraged to bring their own bows or firearms. The event, including lunch, is free. To register, call 417-742-4361. This is part of the Conservation Department's Discover Nature program. Basic shooting events taken under the old Missouri's Outdoor Women or Becoming an Outdoors Woman programs meet the previous training requirement. For more information about Discover Nature — Women program offerings, visit www.MissouriConservation.org/13109. For information about Discover Nature — Families, visit www.MissouriConservation.org/16543.

Trail Guide



PRAIRIES ABLAZE WITH WILDFLOWERS

MUCH OF WESTERN Missouri originally was defined by tall- and mid-grass prairie that turned into waving oceans of rainbow-hued wildflowers each June. Today, less than one-half of 1 percent of the Show-Me State's original prairies remain, but June still is a spectacular month to visit prairie remnants on conservation areas. Prairies' open character makes constructed trails unnecessary. Strike out on your own and explore Drovers, Paint Brush or Friendly prairies in Pettis County, Wah-Sha-She Prairie in Jasper County, Pawhuska Prairie in Barton County, Taberville Prairie in St. Clair County or Hi Lonesome Prairie in Cooper County. Paint Brush Prairie in particular is known for mysterious hillocks of soil and gravel called Mima mounds. No one knows how they got there — just one of the prairie ecosystem's secrets. While pondering Mima mounds, watch for signature prairie species like prairie chickens, regal fritillary butterflies, pink katydids, slender glass lizards, upland sandpipers and Mead's milkweed. Don't forget to enjoy the riot of prairie wildflowers.



CLOCKWISE FROM TOP: NOPPADOL PAOTHONG, NOPPADOL PAOTHONG AND DAVID STONNER



TAKING ACTION

La Benite Trail Volunteers

Group Mission: Create and maintain the La Benite Trail. The 1.75-mile trail was built along the south bank of the Missouri River. It begins in La Benite Park (City of Sugar Creek) and ends at the confluence of Mill Creek and the Missouri River.

Learn More or Volunteer: Contact Bill Haman at WHaman1057@aol.com or 816-254-8935.

THE LA BENITE Trail Volunteers don't actually exist. Well, not formally, at least. The several hundred volunteers that came together to create one of the most unique trails in Kansas City didn't do so because of any particular affiliation. They just wanted to contribute to a great project. Oh, and Bill and Carolyn Haman asked.

Bill Haman has directed the trail effort since the City of Sugar Creek received a grant from the Lewis & Clark Bicentennial Commission. "This was a very difficult project since most of the area was covered with thick underbrush and grape vines," says Bill. "In some of the areas we actually had to crawl just to get through." Clearing and grading the trail took five weekends, spread out over two years, and the whole project took four years from conception to completion.

While the City of Sugar Creek, Jackson County Parks and Recreation and MDC provided land and some assistance, it was the volunteers and support of local businesses that made the trail possible. "As a result of the huge amount of volunteer labor donated for the project we were able to apply the entire L&C grant money toward the signs, benches and other park improvements," says Bill.

Volunteers continue to maintain and improve the trail, and newcomers are always welcome. No paperwork, dues or matching T-shirts required.

Hunter Ed Volunteers

Ensure our hunting heritage as a mentor and instructor.

There are nearly 6 million people in Missouri, so it is no wonder that it takes more than our few Department staff to handle the public's outdoor education needs. It takes volunteers and partnerships to reach out and make a difference in our state.

Hunter and Bowhunter Education volunteers are among the largest single group of dedicated individuals who ensure our hunting heritage continues. They help develop hunters that are knowledgeable, responsible and involved — hunters who understand the importance of complying with hunting laws and behaving ethically. These instructors are motivated to pass on their knowledge and experience to a new generation and are proud of their nationally recognized efforts.

Each instructor starts off by becoming a graduate of Hunter Education or Bowhunter Education. Then, through a class instructor or by calling a regional office, they are referred to their region's Outdoor Skill Specialist (OSS). The OSS will discuss becoming an instructor with the individual, send an application and notify them when the next training class is held. Once certified, the instructor teams up with other instructors to conduct training.

Instructors not only earn the admiration of their students and make our outdoors a safer place, but qualify for service and incentive awards for their efforts. To get more information, or to sign up to become an instructor, contact your regional office (phone numbers on Page 3). — *Tony Legg, hunter education/shooting range coordinator*





What About Walleye?

Program makes toothy fish a big hit with anglers.

W e Missourians may not have as many lakes that contain walleye as states to our north, but what we've got is good, even by their standards. Our "Walleye Initiative," which started in 1998, has been working to provide more and better walleye fishing opportunities in the state. Search through the *2009 Fishing Prospects* (www.MissouriConservation.org/4193) for waters biologists predict will produce good walleye fishing.

Walleye are considered a deep-water fish, but in early summer they are often caught on the flats, where they search for prey. Contour maps will help you identify large shallow areas that abut deep water. Fish early and late in the day, or even at night. An afternoon chop on the water may also bring walleyes up to feed.

Try dragging a jig with a piece of night crawler on it, or string a whole night crawler on a hook or pair of hooks behind a spinner. Let the wind or your troll motor move you along slowly so that your offering frequently ticks bottom. Nighttime anglers often slow-troll shallow-running crankbaits over the flats.

When walleyes are deep, try near bluff edges or across points that jut out into deep water. On big rivers, focus on deep pools and the upstream edges of wing dams and dikes. Mark where you catch a walleye; they're a school fish, which means where there's one you'll often find more.



Missouri's Walleye Factory

Scout it Out



Name: Stockton Lake

Location: 15 miles north of Springfield in Cedar, Dade and Polk counties.

For more info: Call 417-895-6880 or visit www.MissouriConservation.org/a7701.



IMAGINE HOW FAR the water level in Stockton Lake might drop if all the walleye that lived there were suddenly removed. That could never happen, of course, but it's a fun — and positive — mental exercise to engage in while heading to southwest Missouri for a day of fishing on the picturesque reservoir.

Stockton Lake's nearly 25,000 acres pump out walleyes as if from an assembly line. Through periodic stocking of finger-size walleye, the Conservation Department makes sure the lake has all the basic material it needs to manufacture great fishing. Walleye are not the only product in Stockton's line; smallmouth, largemouth, Kentucky and white bass are plentiful, and the crap-pie fishing is excellent. Most local businesses that sell fishing equipment have lake maps, or you can learn lots about the lake and its facilities at www.nwk.usace.army.mil/st/. Brush piles are marked, and you can view a map of them at mdcgis.mdc.mo.gov/website/stocktonlake/viewer.htm. For fishing reports updated weekly, go to www.MissouriConservation.org/4183.



The Amazing Cattail

Some part of the plant is edible in all seasons.

Where you find cattails, you'll find water, and that information by itself could be useful. These easy to identify plants grow throughout Missouri and are a favorite of wild food gatherers. You can start with cattail shoots in the spring. Amid the previous year's dried and withered plants you'll find small new shoots poking out of the ground or mud. Grasp them near the root and pull them free. Peel away the tough outer layers, wash what's left in clean water and eat. They taste like cucumbers. The roots are a year-round food source. You can boil, roast or barbecue them, or you can extract a flour from them. Later in the year, boil pollen spikes and eat them like corn on the cob. Parts of these extremely versatile plants have also proven valuable as cordage, weaving materials, kindling and insulation.

Cattails can produce more edible starch per acre than potatoes, rice or yams. Learn about edible wild plants from the *Wild Edibles of Missouri*. The book is no longer in print, but PDF chapters of the book are available through the Conservation Department Web site at www.MissouriConservation.org/n1996.



Cattails

I Burp for Bullfrogs

Nights near water bring out nature's bass section.

In 2005, the Missouri Legislature designated the bullfrog (*Rana catesbeiana*) as the state amphibian. Bullfrogs are the largest frogs native to North America and are found in every county in Missouri. Their loud, guttural *jug-o-rum* resounds through the night air near streams, ponds and wetlands during the bullfrog breeding season, which runs from mid-May to late July. It doesn't help troubled sleepers that the chorus of calls usually peaks between midnight and 3 a.m.

Learn more frog facts from a free booklet available by writing *Missouri Toads and Frogs*, PO Box 180, Jefferson City, MO 65102, or e-mail pubstaff@mdc.mo.gov.

NATIVE BEAUTY



Prickly pear cactus

Prickly Pear

HERE'S A RIDDLE: What's nice to look at, dangerous to touch, yet good to eat? Few would guess a prickly pear, but this native ground-hugging cactus has showy yellow flowers — often with a splotch of orange in the center — a deceptive set of thorns and reddish fruit that is considered edible.

Like most cacti, prickly pear (*Opuntia humifusa*) thrives in dry places, including glades, open hillsides, pastures and roadsides. The plants hug the ground and form clumps. Each flower only lasts for a day or two. Common names for them include Indian fig, beavertail and devil's tongue. The last likely came from the plant's spined stems, which resemble tongues and can deliver a memorable lashing.

It's easy to avoid the long spines that project out from the stems, but lurking beneath are tiny soft patches — the actual leaves of the plant. Just touching these can deliver a multitude of tiny barbed bristles into the skin. These are irritating and difficult to remove. Try scraping them off with a dull knife.

With attributes of both beauty and beast, prickly pear has strong supporters and opponents. Some people like the idea of having a cactus in Missouri and even in their garden. Others struggle to eliminate the plant from fields and yards.



Controlling Cattails

You can have too much of a good thing.

Cattails, water primrose and other aquatic plants make lakes more beautiful and productive, but they also can get out of control, choking shorelines and ruining recreation. Fisheries biologists at Conservation Department regional offices can offer advice about managing cattails and other aquatic plants in your lake or pond. Information about controlling rampant vegetation is available at www.MissouriConservation.org/10 or by contacting the nearest Conservation Department office. You also can write to MDC, *Cattails and Water Primrose Control*, PO Box 180, Jefferson City, MO 65102 or e-mail pubstaff@mdc.mo.gov.



Missouri Stream Team has the tools to help you tackle it and a network of other stream-loving Missourians to share their experience and knowledge of stream conservation. To form your own stream team, visit www.mostreamteam.org, or call 573-751-4115, ext. 3590.

You can do it, too!

Stream conservation is for everyone.

Reading about different stream teams' remarkable achievements in this space each month, it is easy to get the idea the program is only for people with superhuman energy and soaring ambitions for big-name rivers. The truth is, most stream teams are made up of average folks who love a certain creek and just want to make sure it stays nice. The great thing about Missouri Stream Team is that it empowers members to do what they want, when and where they want. It can help you save the world if that is your goal, or simply give you a reason to check on your favorite stream now and then to be sure all is well. If you should ever discover a problem,

Stream Team



Bull Creek at Bear Field



LYNN LAMBERT AND her family have been a stream team for 14 years, but their history with Bull Creek goes back 30 years, to when they bought 37 acres along this small Ozark stream.

Lynn's husband, Dek Koeller, has worked steadily over the past 20 years to protect the stream corridor by planting about 100 trees and shrubs each year to replace those removed by a previous owner. The couple also has worked to stabilize eroding creek banks and recently completed their 14th annual litter cleanup. Their son, Jafar, got friends interested in water quality monitoring, which they now practice on other streams. "This is one of the most beautiful, clean, thriving creeks in this area," says Lynn. "It is a treasure. We have a real responsibility to do what we can to take care of this stretch of Bull Creek, and more important, to set a good example."

Stream Team Number: 642

Date formed: March 22, 1995

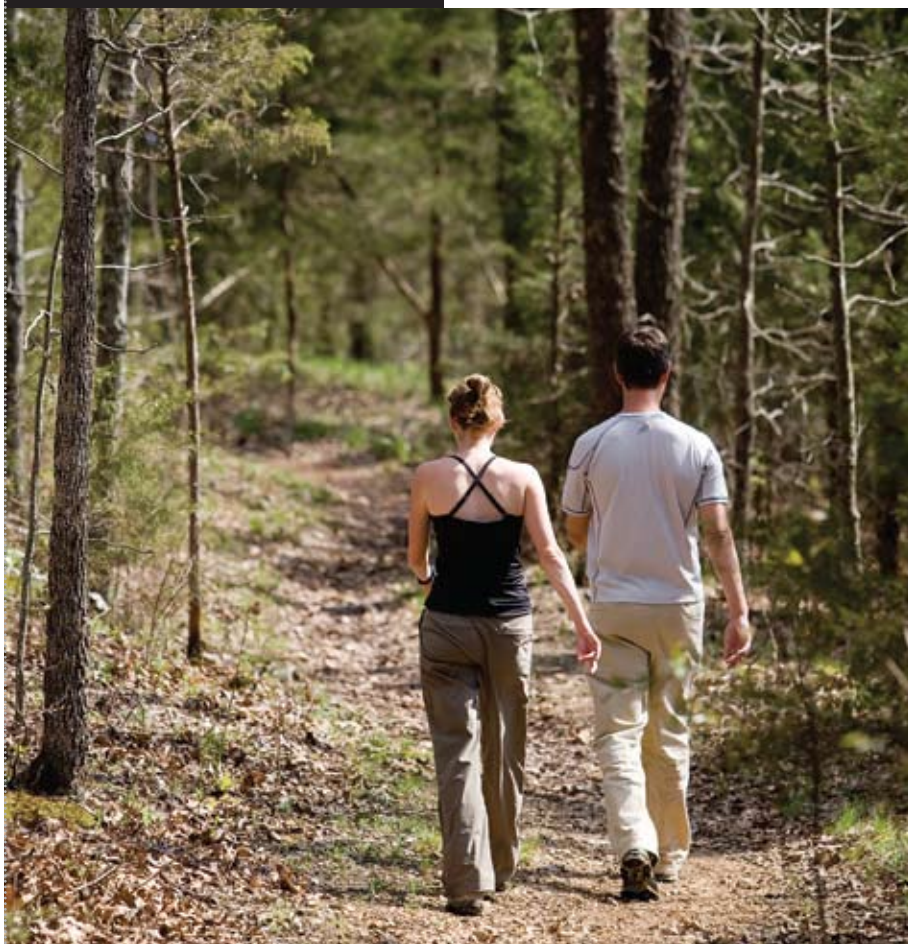
Location: Bull Creek in Christian County

For more info about Stream Teams: www.mostreamteam.org



Our Glorious Forests

COMPTON HOLLOW CA



Size: 840 acres

Location: In Webster County, about 20 miles east of Springfield and 9 miles west of Marshfield

Habitat types: Post-oak flatwoods

Feature: 14-station archery field course and 5.5-mile multi-use trail

Find more info: www.MissouriConservation.org/a6527

Livestock in Woodlands

Grazing your woods can hurt trees, wildlife and livestock.

If you value your family's hardwood groves or woods, it's best to keep livestock out of them. During the growing season, continuous grazing pressure can wipe out the woodland under-story, opening fragile soils to erosion and exposing the roots of mature trees. Forage in woodlands might also be nutrient-poor or poisonous. Learn more about excluding livestock from your woods at www.MissouriConservation.org/292. If you need help fencing livestock, ask your local Department forester about cost-share programs.



Charcoal

From the Ozarks to your backyard barbecue grill

If you love the smell of burgers on the grill, salute the Ozarks. This forested Missouri region has been fueling America's backyard barbecues since the early 20th century. Several Ozark-area producers, including Kingsford and Royal Oak, produce much of the charcoal used in the central United States. The Kingsford facility in Belle features a state-of-the-art manufacturing process that makes charcoal a truly "green" bioenergy. It turns wood waste into a premium product, while recovering heat to run the plant, saving millions of gallons of fuel oil. The Belle plant also provides work for hundreds of people in Maries, Gasconade, Osage and Phelps counties. Next time you barbecue, remember that Missouri's healthy forests and sustainable forest products enrich our lives, wherever we live.



JUNE VISITORS TO Compton Hollow Conservation Area will enjoy a rare opportunity to see how post-oak flatwoods respond to prescribed fire. A relatively uncommon type of hardwood forest, the post-oak flatwood grows on soil that is too poor and rocky to support much else. Managers burned the flatwoods area in March to help maintain the forest's characteristic openness. "In June the post-oak flatwood will be bursting with new growth," said area manager Frances Main. "It's amazing how many seeds are hiding in the soil, just waiting for the right conditions to germinate." Unusual in its ability to tolerate both drought and inundation, post-oak flatwoods contribute to Missouri's high level of natural diversity. They support desertlike species, such as lizards, when it's dry and wetlandlike species, such as frogs, when it's wet. The area's 5.5-mile multi-use trail edges the flatwoods, giving visitors a good view of the dramatic response to fire.



Aid for Grasslands

Incentives help landowners conserve grassland habitat.

Three well-known farm bill programs help landowners bear the cost of conserving grasslands. The Wildlife Habitat Incentives Program and Environmental Quality Incentives



Program provide cost-share and/or incentives for restoring degraded glades, savannas and prairies, including reducing tree canopies, conducting prescribed

burns or planting native grasses and forbs. The Grasslands Reserve Program provides rental and easement payments to preserve native prairies, glades and savannas that are in good condition. Call your local USDA service center for more info.

Patch-Burn Grazing

Cows and birds will benefit from this practice.

Cattlemen usually manage forage with fences and livestock. But Department scientists have been testing a grazing system that relies on fire to produce fat cows and healthy grasslands. With "patch-burn grazing," cattle graze heavily on the most recently burned patch — usually about one-third of the pasture. While the herd is gaining on prime-quality forage, the ungrazed plants rest and build up root reserves. Department scientists believe this method, when practiced on native prairie or native warm-season grass plantings, will yield better wildlife habitat and exceptional summer weight gains. It creates dense nesting



cover, open brooding areas and escape habitat. Stocker calves in the study gained an average of 1.6 pounds per day through the summer months. To

see how patch-burn grazing works, visit www.MissouriConservation.org/18952.

Grazing Approach Yields Booming Bonus

On the Ground



HARRISON COUNTY RANCHER Robin Frank's 3,500 acres lie next to the Dunn Ranch in the Grand River Grasslands Conservation Opportunity Area. That's a good thing for local prairie chickens, because Robin's way of raising cattle features a number of practices that create prime boomer habitat. These include removing trees, converting pasture to native warm-season grasses, controlling exotic plants and conducting prescribed burns. He also practices management-intensive grazing, which creates a mosaic of habitat conditions, ranging from slightly grazed to bare-ground patches. "We've got a lot of chickens on our place, and I think they survive better where they've got a little bare ground." Robin's team of conservation professionals includes staff from the Department of Conservation, Natural Resources Conservation Service and the Soil and Water Conservation District. They help him implement a full range of grassland conservation practices. To see if your land lies within a COA, contact your regional office (see Page 3).



New at the Nature Shop

Shrubs and Woody Vines of Missouri Field Guide

Start identifying the native shrubs and vines in your yard or out in the wild. Don Kurz's *Shrubs and Woody Vines of Missouri Field Guide* will show you how. Based on Don's original *Shrubs and Woody Vines of Missouri*, this concise, easy-to-carry field guide features 181 species. Included are 125 native shrubs, 32 native woody vines, 18 exotic shrubs and six exotic woody vines. Organized visually by leaf arrangement and shape, each species entry includes easy-to-understand descriptions and range maps. Colorized illustrations by Paul Nelson add to the book's appeal. Pick up the *Shrubs and Woody Vines of Missouri Field Guide* at your local conservation nature center. You can also order by phone (toll free) at 877-521-8632, or online at www.mdcNatureShop.com. The price is \$7.50 plus shipping and handling and sales tax (where applicable).



Free Summer Fun

Explore your region's nature and interpretive centers.

If the sinking economy has sunk your summer travel plans, don't forget your local conservation nature and interpretive centers. There your family can enjoy naturalist programs, view exhibits, hike trails and borrow tools to help you explore nature together. Some centers lend daypacks filled with gear. For example, the Cape Girardeau Conservation Nature Center offers six different Discover Nature daypacks: birds, insects, trees, aquatic life, art and naturalist skills. Cape also lends fishing poles and bait for use in the Kids Only fishing pond. There's an exciting conservation nature or interpretive center near you. Find it at www.MissouriConservation.org/18163.

NATURE ACTIVITY



Father/Daughter Free Fishing Day



REMEMBER WHEN YOU were a kid, how the outdoors seemed mysterious, even a little scary? Maybe your dad or another special adult helped you explore nature, bait a hook and land your first fish. Our

Father/Daughter Free Fishing Day at the Northeast Regional Office in Kirksville gives parents — and especially dads — a chance to introduce their daughters to the lifelong joy of fishing. As a Discover Nature — Families program, our Father/Daughter Free Fishing Day will help girls and their dads explore nature and master outdoor skills together. In addition to fishing skills, activities will include knot tying, a casting contest, a fish-themed craft and games. Fishing poles and worms will be available for use free of charge. For more details, contact the Northeast Regional Office in Kirksville at 660-785-2420.

Where: The Northeast Regional Office pond in Kirksville

When: June 6, from 9 a.m. to 12 p.m.

Who should come? Girls accompanied by their dads or an adult

To register: Call 660-785-2420.



Chickweed geometer



Flutterly Fascinating

Moths are not all brown,
and they're not at all boring.

story and photos by DONNA BRUNET

A moth fluttering through the air on a summer night suddenly hears the calls of a bat in pursuit of a meal. The moth vibrates tiny membranes on its thorax in response. These are meant to momentarily confuse the bat's interpretation of the echoes its calls return, allowing the moth to escape. When the bat continues to close in, the moth stops flying, closes its wings and plummets to the earth in a final attempt to elude the predator.

Beautiful and interesting animals are living out their lives in your backyard. Christened with exotic names such as green marvel, cynical quaker and promiscuous angle, Missouri's moths are just outside your home almost every summer night, mating, laying eggs, feeding and escaping from predators.

Bird-dropping moths, such as this one, look just like the name suggests. This helps them avoid being eaten.

Although almost everyone likes butterflies, most people are lukewarm when it comes to moths. That's because people generally tend to think of moths as dull and butterflies as colorful. However some moths, such as painted lichen moth, grapevine epimenis, and banded tiger moth, outshine many butterflies.



A Moth Photo Collection

You can use a compact digital camera to create a virtual moth collection, avoiding the upkeep of a traditional collection. Keep records of the moths seen in your yard or neighborhood park. More than a hundred species can easily be found in most yards in a year.

Sometimes it's hard to tell whether you are looking at a moth or a butterfly. Some of the distinctions between the two groups are visible only under a microscope. It's true, however, that butterflies are generally more active during the day, while many moths are nocturnal. Butterflies also hold their wings either out to the side or folded together over their bodies, while most moth wings are angled like an A-frame roof.

In North America, the most reliable way to distinguish moths from butterflies is to look at the antennae. Butterflies have thin antennae with clubs at the tips, while moth antennae are either threadlike, narrowed at the tip or feathered.

Feathered antennae are generally larger on males and play an important function in reproduction. Those feathery antennae are sensitive to the chemicals in pheromones released by females to attract potential mates.

Crickets use sounds to find mates in the dark; moths accomplish the same thing with scents. Females release pheromones from abdominal glands at a specific time. This "calling time" can help prevent moths with similar pheromone chemicals from finding the wrong mate.

Females select nights with a light breeze to disperse the pheromones, but not so windy that the pheromone plume is distorted. Male moths that have been marked and released have been caught in traps baited with female pheromones more than 20 miles away.

Staying Alive

Staying alive long enough to reproduce is critical to an animal's success. Many moths have evolved unique markings and coloration to help them blend into the background, look like an object nothing wants to eat or warn a predator that it is inedible.

The orange wing moth is often seen flying through the woods in early spring. While



Luna moth

only the hind wings are orange, it looks bright orange in flight so a bird in pursuit forms a search image of an orange moth. When the moth lands, the bird's target disappears as the brown forewings conceal the orange.

Bird-dropping moths rest on the top side of leaves, their scales a mixture of white, gray, and brown, looking just as their name suggests, which is a great way to avoid being eaten. Other moths have brown, gray, and black scales to help them blend into tree bark, where they rest virtually invisible throughout the day.

Some tiger moth caterpillars absorb chemicals from plants that make animals that eat them sick. Those chemicals are retained in the bodies of the adult moths. Some moths also have tough bodies that can survive the first bite; red, black, white and yellow scales that warn predators not to eat them; and the ability to make high-pitched noises in flight to warn bats.

The black and brown woolly bear seen crawling over the ground in the fall is a tiger moth. It's edible, but it makes the warning sounds made by the inedible tiger moths. It's a mimic, gaining protection by imitating another species.

Luring Moths

To attract more moths to your yard for easy observation, you can plant flowers that produce nectar, you can smear moth bait on tree trunks, or you can leave a light on. Not all species are attracted by all three methods, but by trying all of them, you should see a wide variety of moths.

Most adult moths feed on nectar, fruit or sap, just like butterflies. A variety of day-flying moths visit the same flowers as butterflies. Watch for bright orange, white, and black ailanthus webworm moths at dogbane; snowberry clearwing moths at bee balm. Spotted Beet webworm moths, along with a variety of other moths and butterflies, are attracted to sedum and catmint.

Most moths are active at night. Flowers that rely on moth pollination are often white, heavily scented or both. Their fragrance is released once the sun sets and is highly attractive to moths. In one study, sphinx moths released 300 yards from flowers bolted straight for the flower bed, presumably following the scent. Plant four o'clocks, dame's rocket, and night-blooming nicotianas to attract moths to your yard.

The most reliable way to distinguish a butterfly from a moth is to look at its antennae. Moth antennae are thread-like, narrowed at the tip or feathered, while butterflies have thin antennae with clubs at the tips.



Green marvel moth

Scientists think moths are not really attracted to light, but are trapped by them, causing a sensory overload.

Sphinx moths learn where their preferred flowers are and follow a set route each day, stopping to sip nectar along the way. Several years ago, a single yellow evening primrose in my yard opened each day at dusk. Like clockwork, the petals unfurled at the same time each night. For about one week, just moments after the flower opened, a sphinx moth hovered in front of the flower sipping nectar.

In addition to planting flowers, try luring moths with sweet, fermented bait. Instead of throwing out overripe bananas, mash them and stir in a few spoonfuls of brown sugar and

about half a can of beer. The exact amount can vary, and you can use other overly ripe, mashed fruits. Let the mixture ferment at room temperature for a day or two for best results and store any leftovers in the refrigerator for about a week. The bait should be a thick mixture that you can spread onto about one square foot of a tree trunk with a new paintbrush. Brushing it onto several trees in the same area will increase the chances of insects finding your bait. A wide variety of moths, including zales and underwings, are attracted to bait.

If you check your bait during the day, you might find butterflies, such as red admirals, goatweed leafwings and question marks. Use caution with bait if you live in an area of the state with black bears. Wasps may be at the bait during daylight hours but are usually docile because they are away from their nests.

Moths and Lights

Everyone knows that moths can be found at lights. Current thinking is that moths aren't really attracted to lights, but are trapped by them. Bright lights at night cause a sensory overload. Scientists think moths see dark areas either adjacent to or in the center of the light source. Moths try to fly towards that dark area, but as they move, their perspective changes, and they continually change directions, remaining in the vicinity of the light.

An older explanation for why moths are attracted to lights is that moths use the moon for navigation and confuse artificial lights with the light from the moon. If a moth is flying at a specific angle in relation to the moon and then transfers that angle to an artificial light, it will continually alter its flight path as it passes the light, eventually spiraling in close to the bulb. In response to bright light — or daylight — moths land.

Whatever the attraction, lights are a good way to get a look at moths not enticed by flowers or bait. Silk moths, such as the luna moth, do not feed as adults. They live only about a week as adults, subsisting on walnut or hickory leaves eaten as caterpillars.

You can attract many moths with your porch light, but if you are serious about finding a wide variety of moths, use either a mercury vapor bulb or a black light. Those bulbs

produce different wavelengths of light which attract different species. Try not to leave your lights on every night; moths and other insects will be drawn to the light instead of engaging in normal behaviors.

Many people think of moths (and most other insects) as pests, believing all moths eat clothes and crops. In reality, only about 2 percent of all insects worldwide cause problems, such as feeding on crops or transmitting diseases. The rest are critical components of ecosystems. Learning more about moths and their life histories will help you understand basic biological concepts including species interactions, ecological adaptations, and the importance of conserving biodiversity.

Take a few steps out your door and check out the moths in your yard. A fascinating world awaits you. ▲

Moth Learning Library

The Department of Conservation's *Butterflies and Moths of Missouri* by J. Richard and Joan E. Heitzman is a good starting point for learning more about Missouri's moths. It includes 833 color photos and descriptions of 324 species. Range, habits, size and status of each are included in the 385 pages. *Butterflies and Moths of Missouri* is available for \$18 plus shipping and handling, and sales tax (where applicable) by calling toll free 877-521-8632 or visiting www.mdcNatureShop.com or at Conservation Nature Centers statewide.

A Field Guide to Moths of Eastern North America by Charles V. Covell, Jr., covers many more species of moths than the state guide.

Discovering Moths: Nighttime Jewels in Your Own Backyard is John Himmelman's entertaining story of his adventures searching for moths. He provides information on their biology, including time of year when certain moths are most likely to be seen, along with insight into attitudes toward moths.

One of the best online resources for not only moths, but all insects, is BugGuide (www.bugguide.net). You can search through photographs or submit a photo and ask for identification help. Frequently, you'll have your answer within the day.

Eight-spotted forester moth



Many people think of moths as pests, but in reality 98 percent of insects worldwide are critical components of ecosystems.



Angling for **ODDBALL FISH**

*These fish are fun to
fight on the water and
tasty to eat for dinner.*

by GREG STONER, *photos by* NOPPADOL PAOTHONG



A longnose gar is caught with a lure made of frayed rope. The lure “hooks” the fish by wrapping around its snout and entangling its many teeth.

Anglers fish for bowfin at Mingo National Wildlife Refuge near Puxico. This oddball fish tends to seek shelter in areas containing woody cover or vegetation.

The canoe slips quietly through the water toward the river bend where the two friends had found luck on previous outings. The mist hangs heavy on the water. It's just light enough to see where to cast. Once at their destination, spinner baits are tossed to likely looking spots along the bank and retrieved just under the surface. The angler in the bow gets his lure about 3 feet from the boat and is already scanning the bank, planning his next cast. That's when the explosion happens. A vicious strike and brief hard battle, followed by a limp line. It's a common story on this river — fish on, fish gone (oh yeah, spinner bait's gone, too).

This sounds like a scene from a big bass honeyhole, but the fish that caused all the com-

motion was a bowfin, an ancient relic that has changed little for millions of years.

Missouri is home to a number of fish species that, for one reason or another, never have attained the popularity fish such as bass and crappie have with anglers. With very few anglers seeking out these off-the-wall species, many waters contain large, untapped populations. Two of these fish, the bowfin and gar, will seldom, if ever, grace the cover of a major fishing magazine. But in reality, their ferocious strikes and subsequent battle on the end of your line will put most game fish to shame.

The earliest ancestors of bowfin date to the early Jurassic period, approximately 180 million years ago. Gar date back to the Permian period, nearly 300 million years ago! They saw



the dinosaurs evolve, flourish and go extinct, so they must be doing something right. Their nonsense approach to capturing prey might be responsible for their success. In addition, they can rise to the surface and gulp air into an air bladder — which functions as a primitive lung. This allows them to survive in waters containing insufficient oxygen to support most species of fish.

BOWFIN

The bowfin is native to the Mississippi River drainage and the Bootheel region of Missouri. Bowfin are most abundant in relatively clear waters with little to no current. Many of the ditches in southeast Missouri and the area surrounding Mingo National Wildlife Refuge support populations of bowfin. They are known by many colorful local names including cypress trout, grinnel, dogfish, scaled ling and swamp muskie.

Bowfin tend to seek shelter in areas containing woody cover or vegetation. These are prime areas to fish, even during bright sunny days. They will take a number of artificial baits including spinner baits, crankbaits and plastic worms. Natural baits such as night crawlers, minnows and bluegill (heads) fished on the bottom or under a bobber will often get the attention of a bowfin when they are ignoring artificial lures.

Although they will sometimes gently pick up a natural bait, the strike of a bowfin on an artificial lure can be only described as “vicious.” Unlike bass or crappie, you are never left wondering if you are getting a bite or not. They also have a habit of following a lure nearly to the boat before striking. Regardless of what type of tackle you are using, there is not much you can do with 3 feet of line between you and 6 or more

Snakeheads

Bowfin are similar in appearance to the notorious northern snakehead, which has been introduced into several states, including Arkansas. Snakeheads are a top predator in Asian waters where they are native. If introduced to Missouri waters, they could have negative impacts on native fish populations such as bass and crappie. A key difference between the snakehead and the bowfin is that the latter has a short anal fin while the anal fin of the snakehead is long and similar in size to its dorsal fin.

Snakeheads are a prohibited species. Neither live snakeheads nor their viable eggs may be imported, exported, transported, sold, purchased or possessed in Missouri.

If you find a snakehead, please contact Tim Banek, the Missouri Department of Conservation invasive species coordinator at 573-522-4115, ext. 3371, or by e-mailing tim.banek@mdc.mo.gov.



Snakehead



Bowfin

SNAKEHEAD ILLUSTRATION BY SUSAN TRAMMELL; BOWFIN ILLUSTRATION BY JOE TOMELLERI

pounds of angry fish except hang on. Bowfin have a hard mouth which makes it difficult to get a good hook set. Once hooked, they fight wildly and typically head for the nearest thick cover. Getting a bowfin to bite is generally not a problem. Getting it in the landing net can be.

TENDER TREAT

Although few people eat bowfin, the fried fillets are quite tasty provided a simple rule is followed: Bowfin must be kept alive until cleaned or the meat will turn to the consistency of mashed potatoes. To clean the fish, fillet it in the same manner you would a bass or crappie, with one exception: As the flesh is being separated from the skin, cut it away into finger-sized steaks and wash immediately in cold water. Unlike some fish like white bass or blue catfish, bowfin do not

Know the Code

Before you head out on your next fishing adventure, familiarize yourself with the regulations for the species and area you will be fishing. Gar and bowfin are classified as nongame fish, and those regulations are summarized on Page 10 of the 2009 *Summary of Fishing Regulations*. Pick up *A Summary of Missouri Fishing Regulations* at your local permit vendor or download a PDF at www.MissouriConservation.org/2115.

have a “mudline,” so all of the flesh can be eaten. These steaks can be prepared for the table immediately or frozen in water where they will remain in excellent condition for several months. Speaking from experience, cold bowfin fillets are awfully good eatin’ while sitting on a bank waiting for another bowfin to bite!

GAR

Gar are found in most of the medium-to-large streams and reservoirs throughout Missouri. Of the four species of gar in the state, the longnose gar is the most widespread, being found statewide. With the exception of the alligator gar, it is also the largest, commonly reaching weights of 12 to 15 pounds. The current state record longnose gar is a whopping 34 pounds, 7 ounces. The shortnose gar is found primarily in large rivers and ditches in the Bootheel. The spotted gar is most common in the Bootheel region. The alligator gar, Missouri’s largest fish, is

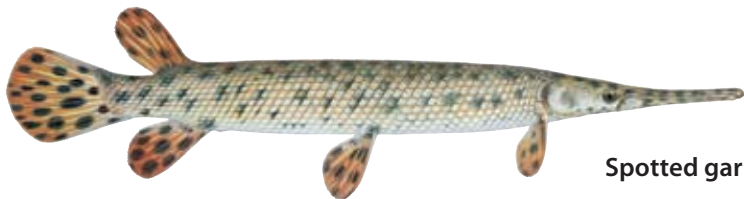
known from only a handful of sightings in the Bootheel and lower Mississippi River. An alligator gar caught in Dunklin County in 1956 was 7.5 feet long and weighed 220 pounds! The alligator gar population in the state has declined drastically over the past century due to habitat loss and overharvest. In an effort to reestablish the species, the Conservation Department started a reintroduction program at Mingo National Wildlife Refuge in 2007.

Gar will hit most lures that anglers would typically use to catch bass. However, because of the way they feed and their bony, beak-like jaws, few are hooked and landed. Unlike bass that ambush and engulf their prey, gar tend to slowly glide up next to a potential meal, usually a small fish, and grab it with a sideways swipe of the head. Impaled on rows of needle sharp teeth, the prey eventually stops struggling. The gar then turns the prey so that it can be swallowed headfirst. The problem with using a lure such as a crankbait to catch gar is that there is next to nothing in a gar’s beak to set a hook into. Any pressure on the line and the gar will usually release the bait.

A novel approach to catching gar, longnose gar in particular, is to use a rope lure. You won’t find these at your local tackle store, but they are easy and inexpensive to make. The best type of rope to use is the twisted nylon variety that frays out into very fine strands. Take a length of rope that is 20 to 24 inches long and the thickness of a pencil and fray it out. Run this group of fibers through one side of a barrel swivel and tie it in the middle with an overhand knot so that 10 to 12 inches of fiber sticks out on each side. To keep the knot from coming undone, put a few drops of super glue on the knot. When tying this lure to your rod, put a slip sinker above the lure as if you were rigging up a plastic worm. For added flash, you can add several plastic beads above the sinker and top it off with an in-line spinner on a clevis. Two feet of 3/4-inch diameter rope will make about 10 lures. You may be thinking, “Where does the hook go?” Well, there is no hook. When a gar grabs the lure, the nylon filaments tangle in the teeth and around the jaws of the fish. Once this happens, they can’t let go of the lure.

Gar tend to congregate in large schools in reservoirs and in deep pools in rivers. From mid-summer through early fall, gar can be seen

Gar Species in Missouri



Spotted gar



Shortnose gar



Longnose gar



Alligator gar

ILLUSTRATIONS BY JOE TOMELLERI

breaking the surface, or “porpoising,” indicating the presence of a school. To fish the rope lure, cast it out and retrieve with a pumping action 3 or 4 feet below the surface. If a gar surfaces within casting distance, putting the lure 8 to 10 feet in front of the fish will often yield results.

As a fighter, I’d put gar up against any game fish out there. They pull and dig for the bottom like a big catfish and can jump like a small-mouth bass. The sight of a 4-foot gar clearing the water next to the boat is a spectacular and somewhat intimidating sight.

An essential item to have along on a gar fishing trip is a pair of heavy gloves. In addition to their sharp teeth, their scales are razor sharp. A small sharp knife or pair of scissors is also necessary to cut the rope away from the jaws if you intend to release the fish. Why would you want to keep a gar anyway, they’re no good to eat ... wrong!

TASTE TEST

Gar fillets are delicious fried and even better marinated in Italian dressing and grilled or smoked. As with the bowfin, it is best to keep the gar alive right up until the time you clean it.

Don’t Dump Bait

It’s illegal to dump bait in Missouri waters. Throw unused bait in the trash. Unwanted animals and plants can invade local water, damage habitat and ruin your fishing. To learn more about protecting Missouri’s streams, rivers and lakes from invasive species, visit www.MissouriConservation.org/8228.

To clean a gar, cut off the head and remove the tail in front of the anal fin. Split the belly open using a pair of heavy shears (by heavy, I mean sheet metal shears). Have someone hold the belly open and separate the meat from the armor-like scales using a sharp fillet knife. Once the scales are off, remove the fillets from the backbone and ribs as you would any other fish. Don’t let the blue-gray color of the fillets turn you off. This is a thin layer of connective tissue that can be easily shaved off after soaking the fillets in salt water overnight in the fridge. The resulting fillets are white and firm.

The next time you’re out on the water and the “fishing magazine” species won’t cooperate, give these oddball species a try. You won’t be sorry. ▲

MDC Fisheries Biologist Greg Stoner holds a longnose gar he caught on Lake of the Ozarks.







Dutch Oven Cooking

101

The tips, tools and recipes you'll need for culinary success on your next camp out.

by JIM LOW, *photos by* CLIFF WHITE

Outdoor magazines always make camp cuisine look so appealing. Steam rises from pots of savory venison stew. Golden brown biscuits peek from under the lids of Dutch ovens, and children crowd around mouth-watering desserts.

So why is it that real outdoor dishes usually are burned, raw or seasoned with ashes?

The blame doesn't belong with equipment makers. It is not really the cook's fault, either. The problem is lack of experience. Most of us cook in kitchens the majority of the year. It should come as no surprise that we have trouble using a whole new set of equipment. We simply don't use Dutch ovens and other camp cookware often enough to get really good with them.

Enter the guys in white hats — the International Dutch Oven Society. This group has solutions, in the form of educational programs that make camp cooking all but foolproof. I know, because several years ago I took an intensive two-day Dutch oven instructor training course taught by IDOS instructors. I went in hardly knowing the difference between a Dutch oven and a Crock-Pot. At the

A charcoal chimney starter makes preparing for Dutch oven cooking more convenient, but it is not necessary.



FOR MORE INFORMATION

You can get a wealth of information from the International Dutch Oven Society, 41 E. 400 North, No. 210, Logan, Utah 84321, www.idos.com.

end, I was roasting chickens, whipping up casseroles and turning out flawless pineapple upside-down cakes.

You can, too. Here's how.

The first thing you need is faith. You must believe you can cook anything in a Dutch oven that you can cook on your gas or electric range and oven at home. This belief is supported by history.

Pioneers who ventured into the wilderness did without lots of things, but great food was not one of those things. They took with them cast-iron pots with tight-fitting lids. Records from pioneer times — like Lewis and Clark's journals — describe sumptuous meals of roast buffalo hump, boudin blanc, sourdough bread and cakes, pies and bread pudding larded with wild fruits and nuts.

Their Dutch ovens were not the flat-bottomed variety that city folks placed on iron grates in fireplaces. Pioneer ovens had legs to hold them above glowing coals pulled out of the campfire. With ovens like the pioneers had, you too, can cook fantastic meals. You could even do it with coals from a wood fire, but there is an easier way that makes successful Dutch oven cooking possible, even for greenhorns.

Most problems with Dutch oven cooking arise because they don't come with thermostats. Imagine what would happen if you lost all the dials on an electric kitchen range. Guessing at the settings would make cooking anything a hit-or-miss proposition at best.

Choosing an Oven

Generally when we speak of an outdoor Dutch oven, we mean a heavy, rough surface cast iron pot with three feet. The pot should have a long heavy-gauge wire handle attached to the sides that is called a bail. The lid of the pot should fit tightly and have a lip that will hold coals without them falling into your food and a handle on top that can be picked up with a lid lifter.

Your first outdoor Dutch oven probably should be one of standard depth — about 4 or 5 inches. It is tempting to buy deeper ovens, because they hold more. Deep ovens are great for large quantities of stew or big roasts. However, the lid-to-bottom distance of deep ovens makes baking breads, cakes or biscuits almost impossible.

A standard 10-inch diameter oven makes enough casserole to serve three or four people. A 12-incher will feed a large family. A 16-inch oven requires a large family just to lift it when full. ▲



Cut this page out and take with you on your next camping trip!

7 RULES TO SUCCESS

The key to successful outdoor Dutch oven cooking is knowing the temperature of your oven. The secret to this knowledge is charcoal.

Rule No. 1

Charcoal briquettes produce more uniform heat than campfire coals. They last longer, too. Brand-name briquettes have more consistent quality than bargain brands. More important, they are consistent in size — about 2 inches square — which is important for predictable heat.

Rule No. 2

Once you know this, everything else falls into place. Take your oven's diameter in inches and double it. This is the number of high-quality, standard-size charcoal briquettes you will need to heat your oven to 325 degrees every time.

- For a 10-inch oven, you need 20 briquettes.
- For a 12-incher, you need 24 briquettes, and so on.

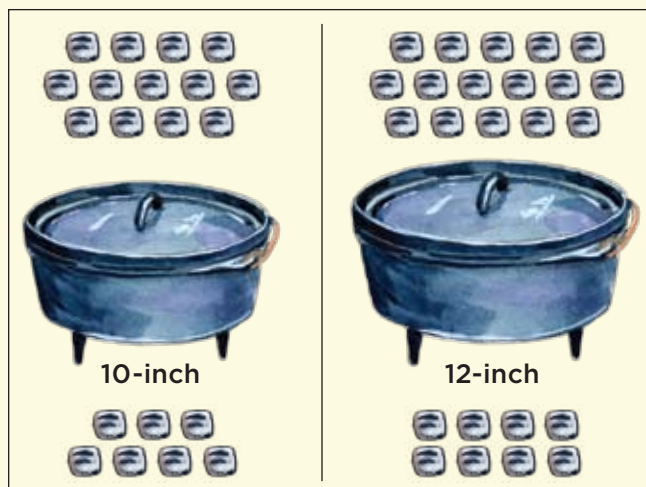
It's that simple.

Individual Dutch ovens vary slightly in cooking temperature with the same amount of charcoal, depending on their shape and thickness. These guidelines get you close enough so that, with practice, you can discover exactly what works for your oven.

Rule No. 3

Because heat rises, briquettes heat the bottom of a Dutch oven more than the top. Consequently, you will need to divide your briquettes between the top and bottom for even heating. How many more briquettes will you need on top? About twice as many — two-thirds up, one-third down.

- To heat a 10-inch oven to 325 degrees, you need seven briquettes below the oven and 13 on top.
- To heat a 12-incher, you need eight below and 16 on top.



Rule No. 3: To heat to 325 degrees, place number of briquettes on top and bottom of oven as shown.

Rule No. 4

Briquettes should be spaced evenly below the bottom of the oven. On top, place one briquette on each side of the center handle and space the rest evenly around the perimeter.

No matter how evenly you space briquettes on the bottom of the oven, there will be hot spots. To compensate for this, lift the oven and turn it 90 degrees every 15 minutes. Turn the lid 90 degrees every 15 minutes when baking cakes and breads.

Rule No. 5

Some recipes call for temperatures higher or lower than 325 degrees. To change oven temperature by 25 degrees, add or subtract two briquettes.

If you want to bake biscuits at 375 degrees, add four briquettes to the number used for a 325-degree oven.

To slow-cook venison chili at 250 degrees, remove six briquettes.

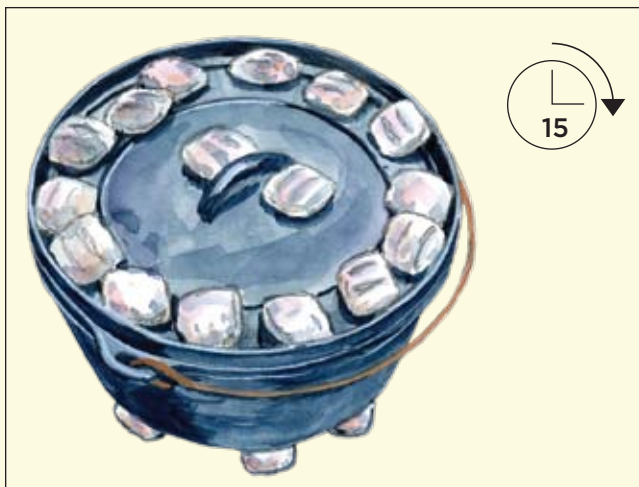
Add or remove two-thirds of the briquettes from the top and the remainder from the bottom to maintain even heat.

Rule No. 6

Charcoal briquettes last about 30 minutes. When recipes call for longer cooking, start replacement charcoal early to avoid temperature drops.

Rule No. 7

Baked goods tend to cook faster on the bottom than on top. To avoid overcooking the bottom or undercooking the top, remove the oven from the bottom charcoal after two-thirds of the baking time has elapsed. The bottom of the oven retains enough heat to finish the job while the top browns.



Rule No. 4: Space briquettes on lid as shown; turn oven 90 degrees every 15 minutes.



Cut this page out and take with you on your next camping trip!

RECIPES

Try these the next time you're out camping.

Pineapple Upside-Down Cake

Size oven: 12 inches

Briquettes needed: 24; 16 on top, 8 on bottom

Ingredients

¼ cup butter
½ cup brown sugar
1 can sliced pineapples
pecan halves
Maraschino cherries
1 full-sized yellow cake mix

Melt butter and sugar in oven. Arrange pineapple slices on top of sugar and butter. Arrange pecan halves around pineapple and put a cherry in the center of each ring. In a separate container, prepare cake mix according to package instructions. Pour batter over pineapple slices and bake according to cake mix directions. When cake is done, remove oven from heat, remove lid and let cool for 10 minutes. Put a cutting board or a circle of cardboard covered with aluminum foil over the top of the oven. Say a little prayer, and flip it. This job is best done by two people.

Zucchini Bake

Size oven: 10 inches

Briquettes needed: 22; 14 on top, 8 on bottom

Ingredients

3 cups grated zucchini
1 egg, beaten
1¼ cups uncooked oatmeal
1 teaspoon dried basil
1 cup grated mozzarella cheese
½ teaspoon salt
1 tablespoon dried, minced onion
¼ teaspoon black pepper
1–3 teaspoons dried, minced garlic
½ cup tomato sauce

Mix all ingredients except tomato sauce in order listed and pour into Dutch oven. Top with tomato sauce. Bake at 350 degrees for 30 minutes.

4 NECESSARY ACCESSORIES

A few high-quality accessories are absolutely critical to Dutch oven cooking success. Don't skimp on these items!

❶ LID LIFTER

Test its function before buying. You should be able to remove a Dutch oven lid easily with enough control to hold the lid vertical and shake off ashes.

❷ EXTRA-LONG KITCHEN TONGS

Food-service supply stores sell these for \$2 or \$3. They allow you to position charcoal briquettes without burning your knuckles.

❸ WELDER'S GLOVES

Or gloves made especially for camp cooking protect your hand when handling hot gear.

❹ POULTRY-WATERING PANS

Farm-supply stores sell these 16-inch wide, 5-inch deep metal pans. Get three per oven. Start charcoal in one. Place your oven in another while

cooking. The sides of the pan keep wind from blowing away precious heat. They also allow you to dispose of charcoal ashes neatly after cooking. The third pan, placed upside-down beneath the pan and oven, allows you to cook without causing permanent damage to grass or pavement.





Roast Chicken and Carrots

Size oven: 12 inches

Briquettes needed: 24; 16 on top, 8 on bottom

Ingredients

2 tablespoons butter
2 tablespoons olive oil
2 cups diced yellow onions
6 garlic cloves, minced
3½ cups diced celery
4 cups sliced carrots
2 bay leaves

2 sprigs fresh thyme
3–4 pound roasting chicken
1 cup chicken stock or bullion
½ cup dry white wine
3 cups stewed tomatoes
salt and pepper to taste
2 tablespoons fresh parsley

Put butter, oil, onions, garlic and celery in Dutch oven and sauté over medium heat until softened. Add carrots, bay leaves and thyme and cook another five minutes. Add chicken (if you don't have a deep oven, cut the chicken into quarters so they lay flat), chicken stock, wine, tomatoes, salt and pepper. Place the lid on the oven and bake at 300 degrees for 1½ hours or until legs are loose and meat is falling off the bone. Replenish coals every 30 minutes and turn oven and lid every 15 minutes.

Hunting and Fishing Calendar

FISHING

Black Bass (certain Ozark streams, see the *Wildlife Code*)

5/23/09 2/28/10

impoundments and other streams year-round

Bullfrogs and Green Frogs Sunset Midnight

6/30/09 10/31/09

Trout Parks 3/1/09 10/31/09

HUNTING

Coyotes 5/11/09 3/31/10

Crow 11/1/08 3/3/09

Deer

Firearms

Urban 10/9/09 10/12/09

Youth 10/31/09 11/1/09

1/2/10 1/3/10

November 11/14/09 11/24/09

Antlerless 11/25/09 12/6/09

Muzzleloader 12/19/09 12/29/09

Archery

9/15/09 11/13/09

11/25/09 1/15/10

Groundhog 5/11/09 12/15/09

Squirrels 5/23/09 2/15/10

Turkey

Firearms

Fall 10/1/09 10/31/09

Archery

9/15/09 11/13/09

11/25/09 1/15/10

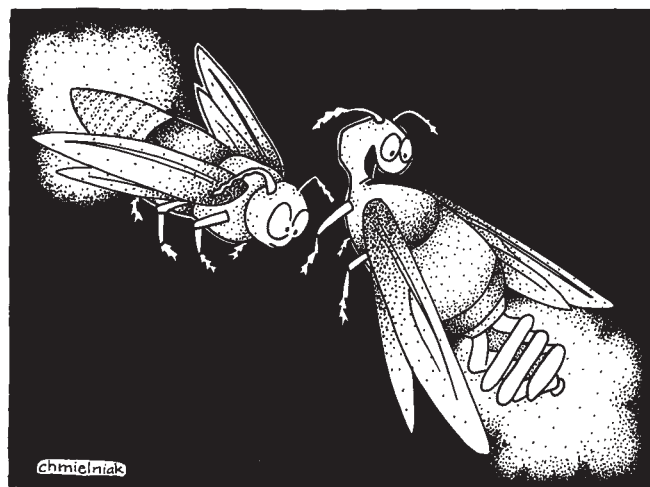
Waterfowl please see the *Waterfowl Hunting Digest* or see www.missouriconservation.org/7573

TRAPPING

Otters and Muskrats 11/15/08 see *Wildlife Code*

For complete information about seasons, limits, methods and restrictions, consult the *Wildlife Code* and the current summaries of *Missouri Hunting and Trapping Regulations* and *Missouri Fishing Regulations*, the *Fall Deer and Turkey Hunting Regulations and Information*, the *Waterfowl Hunting Digest* and the *Migratory Bird Hunting Digest*. For more information visit www.MissouriConservation.org/8707 or permit vendors.

The Department of Conservation's computerized point-of-sale system allows you to purchase or replace your permits through local vendors or by phone. The toll-free number is 800-392-4115. Allow 10 days for delivery of telephone purchases. To purchase permits online go to www.wildlifelicense.com/mo/.



"There's a slight delay when it goes on, but I've had a lot more energy since I switched to it."

Contributors



DONNA BRUNET lives in Columbia and works as a freelance photographer specializing in insect photographs. She has had exhibits at several MDC nature centers. Find more of her work and an insect checklist for Runge Nature Center at donnabrunet.com. She and her husband enjoy birding, camping and biking the Katy Trail.

JIM LOW owns a dozen cast-iron ovens, sauce pans and skillets ranging from a pint to four gallons. (Lifting that one when it is full is a two-man job!) His favorite recipes include venison, squirrel, duck and other wild game. He says his mother's Swiss steak recipe, using venison instead of beef, is enough to make a crusty outdoorsman weep.



GREG STONER has been employed with the Conservation Department as a fisheries management biologist since 1990, and he has been the fisheries management biologist at Lake of the Ozarks since 1991. Greg, his wife, Sherri, his son, Alex, and daughter, Katie, live on the Niangua Arm of Lake of the Ozarks outside Camdenton.



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Missouri households*



“I AM CONSERVATION”

From left: Howard Childress, Jane Kapp and Lelan Kapp take a break between events at a trap shooting competition near Boonville. All three live near St. Joseph and frequently travel to shooting competitions throughout the Midwest. Howard and Lelan have been friends and hunting partners for more than 40 years. “I had a friend with a bird dog who took me to hunt with Kapp on Kapp’s land,” said Childress. “As soon as I met him I knew he would be a friend for life.” They started competitive shooting together in 1989. “We started shooting for the fun of it,” said Lelan. “We thought it would improve our hunting skills. We weren’t going to get serious about it ... but then we did!” The pair brought Lelan’s wife, Jane, into the sport shortly after they caught the bug. “I don’t know how many hundreds of thousands of shells we’ve shot over the years,” said Childress. “When I was in my prime, I shot between 20 and 50 thousand shells a year.” All said, the opportunity to be outside, the challenge and the friendships they make are what keep them involved in the sport. “It’s a challenge every time you go,” said Lelan. “Every course is different, and the targets will be different from day to day. As soon as you learn how to break the targets, the trap setters change them on you.” — PHOTO BY DAVID STONNER